



KENTUCKY TRANSPORTATION CABINET
Department of Highways
DIVISION OF HIGHWAY DESIGN

TC 61-509
Rev.3 /2010
Page 1 of 1

PRELIMINARY DRAINAGE RISK ASSESSMENT FOR FLOODPLAIN ENCROACHMENT

COUNTY	ROUTE	STATION
UPN	FPN	ITEM #

LEVEL 1 – Qualitative assessment involving the application of hydrologic, hydraulic, and geomorphic factors to identify potential problems and alternative solutions for bridges. Perform hydrologic analysis and field survey (*i.e. bridge opening, roadway profile, stream profile, hydraulic sections, etc.*).

Review (check) available documentation:

- | | | |
|--|--|---|
| <input type="checkbox"/> County Soils Study | <input type="checkbox"/> Old Drainage Folder | <input type="checkbox"/> Flood Insurance Maps |
| <input type="checkbox"/> Flood Insurance Study | <input type="checkbox"/> Geologic Maps | <input type="checkbox"/> Roadway Plans |
| <input type="checkbox"/> USACE Study | <input type="checkbox"/> USGS Study | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Bridge Maintenance File | <input type="checkbox"/> Bridge Plans | |

- Is the proposed structure a new crossing? ☐ Yes ☐ No
- Is the proposed bridge > 2 bridge widths up or downstream of the existing bridge, > 50 feet long (*total bridge length*) multispans, > 100 feet long (*single span*)? ☐ Yes ☐ No
- Does the proposed bridge have a grade increase that is larger than the allowable increase? ☐ Yes ☐ No
- Is the proposed bridge in a FEMA Detailed Study Area? ☐ Yes ☐ No
- Is the proposed bridge in a mapped Floodplain where the community is requesting the development of BFEs? ☐ Yes ☐ No
- Is a scour analysis needed? ☐ Yes ☐ No

Replace with hydrologically, hydraulically, and geomorphically equivalent structure. If all issues are addressed with the equivalent structure, document design. If there are outstanding issues that cannot be resolved with Level 1 analysis, go to Level 2.

LEVEL 2 – Quantitative analysis combined with a more detailed qualitative assessment of the hydrologic, hydraulic, and geomorphic factors of the stream. Generally includes water surface profile and scour calculations.

List Design Controls (*i.e. hydraulic, roadway, structure, surrounding property, etc.*)

Perform hydraulic analysis and scour analysis. Evaluate stream stability.

If the answer to either of the following 2 questions is Yes, go to Level 3.

Is the desk area >120,000 ft²? ☐ Yes ☐ No

Is the existing or proposed structure a unique bridge, foundation, etc.? ☐ Yes ☐ No

Design structure to meet the design controls. If design controls are met, document design. If there are outstanding issues that cannot be resolved with a Level 2, go to Level 3.

LEVEL 3 – Complex quantitative analysis based on detailed mathematical modeling and possibly physical hydraulic modeling. This analysis is necessary only for high risk locations, extraordinarily complex problems, and after the fact analysis where losses and liability costs are high.

- Check if used: ☐ FESWMS Analysis ☐ Floodway Modification* ☐ Overflow structure(s)
☐ Risk Analysis ☐ Other _____

Document Design

*IF Existing Roadway Width < Proposed, Purchase Floodway Increase. If Existing Floodway Elevation < Proposed, Purchase Floodplain Increase.